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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/979,551	11/21/2001	Fu Chiung Chong	NNEX0002	4999

7590

09/10/2003

Glenn Patent Group  
3475 Edison Way Suite L  
Menlo Park, CA 94025

EXAMINER

HOLLINGTON, JERMELE M

ART UNIT PAPER NUMBER

2829

DATE MAILED: 09/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/979,551

Applicant(s)

CHONG ET AL.

Examiner

Jermele M. Hollington

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 July 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4, 7-10, 12, 19-24, 32-41, 48-52 and 61 is/are pending in the application.
- 4a) Of the above claim(s) 5, 6, 11, 13-18, 25-31, 42-47, 53-60 and 62-78 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 7-10, 19-24, 32-40, 48-52 and 61 is/are rejected.
- 7) ☒ Claim(s) 12 and 41 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election without traverse of claims 1-4, 7-10, 12, 19-24, 32-41, 48-52 and 61 in Paper No. 5 is acknowledged.
2. Claims 5-6 [see **Note** below], 11, 13-18, 25-31, 42-49 and 53-60 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 5.

[**Note:** claims 5-6 are being withdrawn because the limitation "said plurality of electrically conductive connections... are flexible spring probes on the bottom surface of the system board" is related to the nonelected species.]

3. Claims 62-78 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 5.

### *Drawings*

4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, base on the elected species, a planar region [claim 1, page 42 line 19], at least one interconnection region [claim 1, page 42, line 20] and an assembled component [claim 24] must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

6. Claims 1-4, 7-10, 12, 19-24, 32-41, 48-52 and 61 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1 and 33, the specification does not particularly point the limitations “a planar region” and “at least one interconnection regions” as claimed. It is not define in the specification if a flex circuit region 90 represents one or both of the regions in the claim. Since the specification does point the limitations above, the claim is indefinite.

For examination purposes, the examiner is not given patentable weight to the above limitations until the applicants clarify and provide support in the specification. Since claims 2-4, 7-10, 12, 19-24 and 32 depends off of claim 1 and claims 34-41, 48-52 and 61 depend off of claim 33, they are rejected for the above reasons.

Regarding claims 9-10 and 39-40, the specification does not particularly point that the circuit is a semi-rigid or rigid circuit as claimed. Since the specification does point the limitations above, the claim is indefinite.

For examination purposes, the examiner is not given patentable weight to the above limitations until the applicants clarify and provide support in the specification.

Regarding claims 20-21 and 49-50, the specification does not particularly point that the substrate is a semi-rigid or rigid circuit as claimed. Since the specification does point the limitations above, the claim is indefinite.

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For examination purposes, the examiner is not given patentable weight to the above limitations until the applicants clarify and provide support in the specification.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 3, 7, 19-20, 23-24, 33, 35, 37, 48-49, 52-53 are rejected under 35 U.S.C. 102(b) as being anticipated by Higgins et al (5828226).

Regarding claims 1 and 33, Higgins et al disclose [see Fig. 1] a system for connection to at least one integrated circuit device (shown but not number) on a wafer (10), comprising: a system board (interconnect 17) having a bottom surface (shown but not number) and a top surface (shown but not number), and a plurality of electrical conductors (angled pins 49) extending between said bottom surface and said top surface; a substrate (probe array 11) having a probe surface (bottom surface of the array) and a connector surface (top surface of the array), said probe surface having a plurality of spring probe contact tips (combination of post 25, beam 27 and bump 29 in Fig, 2) for connection to said at least one integrated circuit device [see col. 4, lines 10-14], and a plurality of electrical connections (conductor 24) extending through said substrate (11) between each of said plurality of said spring probe contact tips (combo of 25, 27 and 29) and said connector surface (top surface); a plurality of electrically conductive connections (interposer 13) between each of said plurality of electrical connections (24) on said connector surface (top surface) of said substrate (11) and each of said electrical conductors (49)

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on said bottom surface of said system board (17); at least one interface module (printed circuit board 19) having a plurality of electrically conductive pads (shown but not number) and means (support 14) for fixedly holding each of said at least one interface module (19) in relation to said system board (17), such that said plurality of electrically conductive pads on said planar region of each of said at least one interface module (19) contact at least one of said plurality of electrical conductors (49) on said top surface of said system board (17).

Regarding claims 3 and 35, Higgins et al disclose [see Fig. 1] wherein said plurality of electrically conductive connections (24) between each of said plurality of electrical connections on said connector surface (top surface) of said substrate (11) and each of said electrical conductors (49) on said bottom surface of said system board (17) are spring probes on said connector surface of said substrate (11).

Regarding claims 7 and 37, Higgins et al disclose wherein each of said at least one interface module (19) includes a circuit (shown but not number) having a first surface and a second surface, and wherein said plurality of electrically conductive pads (shown but not number) are located on said first surface.

Regarding claims 19 and 48, Higgins et al disclose wherein said substrate (11) includes a plurality of holes (23 in Fig. 2) defined there through between said probe surface (bottom surface) and said connector surface (top surface), and wherein each of said plurality of electrical connections (24) between each of said contact tips (combo of 25, 27 and 29) and each of said electrically conductive connections (24) are electrically conductive vias located within each of said plurality of holes in said substrate (11) [see Fig. 2].

Regarding claims 20 and 49 Higgins et al disclose wherein said substrate (11) is electrically insulative.

Regarding claims 23, 32, 52 and 61, Higgins et al disclose said substrate (11) is comprised of a material, such as silicon, having a similar thermal coefficient of expansion to said wafer (10).

Regarding claims 24 and 53, Higgins et al disclose an assembled component [see Fig. 2] located on said substrate (11).

### ***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claims 2, 4, 34 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Higgins et al in view of Smith et al (5613861).

Regarding claims 2, 4, 34 and 36, Higgins et al disclose a substrate (probe array 11) having a probe surface (bottom surface of the array) and a connector surface (top surface of the array), said probe surface having a plurality of spring probe contact tips (combination of post 25, beam 27 and bump 29 in Fig. 2) for connection to said at least one integrated circuit device [see col. 4, lines 10-14]. However, they do not disclose said plurality of spring probe contact tips are photolithographically patterned springs. Smith et al disclose [see Fig. 6] a substrate (14) having spring probe contact (15) for connection to said at least one integrated circuit device (contact pad 3) that are photolithographically patterned springs [see Abstract]. Further, Smith et al teach that the addition of spring probe contact tips are photolithographically patterned springs is advantageous because it enables the spring contacts to maintain physical contact with a IC device (or contact pad) despite variations in IC device (contact pad) heights, contacting pressure thermal variations or mechanical shock. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the apparatus of Higgins et al by adding spring probe contact tips that are photolithographically patterned springs as taught by Smith et al in order to enabled the spring contacts to maintain physical contact with a IC device (or contact pad) despite different variations in IC device during testing.

12. Claims 8-10, 21-22, 38-40 and 50-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Higgins et al.

Regarding claims 8-10, Higgins et al disclose wherein each of said at least one interface module (19) includes a circuit (shown but not number) having a first surface and a second surface, and wherein said plurality of electrically conductive pads (shown but not number) are located on said first surface. However, they do not disclose that the circuit is a flexible, semi-



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rigid, or a rigid circuit as claimed. It is well known to use different type of material for a circuit where needed (see MPEP 2144.04; *In re Seid*, 161 F.2d 229, 73 USPQ 431 (CCPA 1947)). It would have been obvious to a person having ordinary skill in the art at the time the invention was made to use different type of materials for a circuit since the different type materials are matters relating to ornamentation, which has no mechanical function, that would provide support in a selective manner to each individual user that uses the circuit to test a integrated circuit device.

Regarding claim 21-22 and 50-51, Higgins et al disclose wherein said substrate (11) includes a plurality of holes (23 in Fig. 2) defined there through between said probe surface (bottom surface) and said connector surface (top surface), and wherein each of said plurality of electrical connections (24) between each of said contact tips (combo of 25, 27 and 29) and each of said electrically conductive connections (24) are electrically conductive vias located within each of said plurality of holes in said substrate (11) [see Fig. 2]. However, they do not disclose that the substrate is dielectric or electrically conductive as claimed. It is well known to use different type of material for a substrate where needed (see MPEP 2144.04; *In re Seid*, 161 F.2d 229, 73 USPQ 431 (CCPA 1947)). It would have been obvious to a person having ordinary skill in the art at the time the invention was made to use different type of materials for a substrate since the different type materials are matters relating to ornamentation, which has no mechanical function, that would provide support in a selective manner to each individual user that uses the substrate to test a integrated circuit device.

### ***Conclusion***

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Maelzer et al (4724377), Beaman et al (5635846), Sano (5703494), Lopergolo et al

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(5800184) and Nakata (6215321) disclose a method and apparatus for testing an integrated circuit device on a wafer.

14. Claims 12 and 41 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

15. The following is a statement of reasons for the indication of allowable subject matter: in the examiner's opinion, it would not have been obvious to a person of ordinary skill in the art to have a buss bar electrically connected to at least one of said at least one said interconnection region of a interface module.

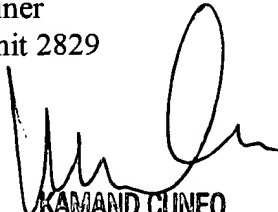
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jermele M. Hollington whose telephone number is (703) 305-1653. The examiner can normally be reached on M-F (9:00-4:30 EST) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo can be reached on (703) 308-1233. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

*J.M.H.*  
JMH  
8/22/03

Jermele M. Hollington  
Examiner  
Art Unit 2829

  
KAMAND CUNEO  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800